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ABSTRACT

This document addresses video production as it relates to counselor education. Groundwork for infusing video production technology is covered, including the video production process, equipment, computer technology that assists in production, video editing, and final production. In addition, three important formats will be discussed. First is the use of the produced video for streaming on the Internet. Simple procedures for embedding video in PowerPoint slide presentations can be easily achieved. This process can be aimed at distance learning, website enhanced content, and other purposes. A second use for produced video is that of the interactive CD-ROM, a medium also becoming readily accessible, that allows for supplemental or stand-alone content for learning. Finally, a new and exciting format is that of the Digital Video Disc (DVD). A discussion of this editing and production process will show its applicability to teaching and training. (Contains 17 references.) (Author)

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Multimedia in the Counselor Education Classroom: Transforming Learning with Video Technology

by
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Chapter Three

Multimedia in the Counselor Education Classroom: Transforming Learning with Video Technology

Michael L. Baltimore

The use of multimedia in the counselor education classroom grows daily. Technological advances have come in many forms including technology classrooms fitted with media projectors and Internet connections, counseling laboratories with video monitoring and recording equipment, computer-based training using CD-ROM in supplemental and primary ways, web-based publishing, and certainly, distance learning methodology. One exciting transformation has been the advent of video recording, editing, and production. Once a costly, complicated procedure left to a few production companies mostly in the television and movie industry, video production tools are now available to the home user and increasingly are standard equipment on new computers. Given this availability, even the average computer owner can now capture, edit, and produce high quality video. In fact, once thought of as only for videotape playback and television, video can now be delivered in many different formats including interactive CD-ROM and DVD and as streaming media on the Internet.

Interestingly, video technology and its widespread availability has use beyond common entertainment value and can be readily adapted to education (Budin, 1999; Escalada & Zollman, 1997; Rowley & Hart, 1996; Steffy, 1997). For example, many counselor educators regularly videotape counselor-in-training counseling sessions for supervision purposes and critique these videos to enhance learning. Counseling labs are equipped with video cameras and playback equipment for these purposes (Taylor, 1996). In addition, professional video training tapes are available that show counselors demonstrating various therapy processes and techniques. While commonly used in counselor education programs, the development and creation of video by counselor educators is not a common practice. Considering the increasingly available technology for this purpose and the

need to infuse technology into training programs, video production now becomes a viable and important resource for counselor educators.

Using such technology can assist in the graduate level preparation of counseling students (Campbell, Lison, Borsook, Hoover, & Arnold, 1995) and can provide experiential activities that increase learning. In the new millennium CDs and DVDs are replacing the videotape as the media of choice for an ever-growing number of information technology professionals in education and training, corporate communications, visual and auditory archiving as well as entertainment publishing.

This chapter addresses video production as it relates to counselor education. Groundwork for infusing video production technology will be covered including the video production process, equipment, computer technology that assists in production, video editing, and final production. In addition, three important formats will be discussed. First is use of the produced video for streaming on the Internet. Simple procedures for embedding video in PowerPoint® slide presentations can be easily achieved. This process can be aimed at distance learning, website enhanced content, and other purposes. A second use for produced video is that of the interactive CD-ROM, a medium also becoming readily accessible, that allows for supplemental or stand-alone content for learning. Finally, a new and exciting format is that of the Digital Video Disc (DVD). A discussion of this editing and production process will show its applicability to teaching and training.

Video Technology and Counselor Educators

As this expansion continues, counselor educators must prepare themselves to make use of technology to enhance their teaching skill, the skill of their students, and the profession in general. Many examples of the use of computers, multimedia projectors, and the Internet supplemental to classroom activities (Forsyth, 1997; Goolkasian, 1996) have already transformed counselor education learning environments and will continue to do so in the future.

For example, a small but growing number of counselor educators has trained themselves in various technologies and implemented changes in the classroom by using video conferencing, CD-ROMs, listservs and web sites as adjunct instructional methods (Forsyth, 1997). However, the vast majority of counselor trainers has not kept pace with this infusion of technology and has relied on traditional means to deliver content.

Currently the use of video created for instructional purposes is limited but is becoming more commonplace (Hawkrige, 2001). For example, it is common practice for counselor educators to use home entertainment videos

to demonstrate interpersonal situations relevant to counselor preparation. However, movie videos rarely demonstrate the precise skill needed to be showcased. It is important that counselor educators envision and then be able to address these training needs with specifically prepared, professional quality media.

New teaching/learning approaches for counselor educators are presented along with methods for developing and using content-based with available technology. In addition, the counselor education classroom and curriculum, it will be argued, can be transformed by the addition of enhanced experiential activities based on new technology (Hawkridge, 2001). The unconventional use of video using students, faculty and others combined with text-based content can become essential in this transformation. Information regarding the preparation and delivery of video-enhanced training is provided. The critical use of this content, including structured exercises, discussion, and assessment, also is outlined.

Using video in the counseling classroom is not new and adapting and expanding the use of video for teaching is a logical leap. In fact, students introduced to video/audio taping as a means of critiquing their counseling skills readily adapt to new ways of using video for training purposes. Instructors can initiate this new approach by bringing a video camera into the classroom.

Preparing an experiential activity can be an invigorating and exciting teaching opportunity. Using video "live" in the classroom enhances learning and can provide a "teachable moment". Further, given the need for counselor educators to build helping and relationship skills, this paradigm of captured video and various uses of video by current students documents the learning process and provides additional feedback for professional growth.

Creative uses of video can help students in a visual way that reinforces, quite distinctively, what verbal and self reports cannot. Conceiving activities for video use is not difficult. Many classroom activities used to discuss, describe, and explore issues in a counseling context can be recorded on video. Other activities can be set up that use video advantageously. For example, reflective exercises that give the trainee immediate and/or ongoing auditory and visual information can greatly enhance learning (Forsyth, 1997). To view one's self on video can be intimidating and even daunting at first, but should not be a reason not to use video as a learning resource. Experience has shown that the benefits outweigh issues of reluctance on the part of the participants.

Approaching students and other participants for videotaping is a similar issue faced by students and faculty as they begin the practicum experience. It appears that if the instructor, in this case, advances the notion that this is

a "painless" and helpful means for learning, usually people are more willing to participate and reluctance diminishes shortly. Also, any student performance anxiety issues may give instructors an opportunity to help the person build confidence and demonstrate skill. These issues are related to "consent to tape" as with any informed consent procedure. Students in a class should be asked for their consent to tape and documentation of consent should be kept. Finally, it is important to address copyright and consent issues when videotaping. "Fair use" information is central to educators using videotape in the classroom (Brinson & Radcliff, 1996). While this chapter does not detail copyright and fair use concerns, those wanting to publish their video work on CD or DVD will want further consultation regarding content copyright. Most copyright issues pertaining to text or book publishing relate to or are, at least, similar to those using video.

Designing activities that utilize video in the classroom is a creative endeavor that challenges instructors. Almost any activity can be adapted and once on video, the instructor has the opportunity to use that video in several ways. First, playback of video for group or individual reflection is an option. Demonstrations of technique, self-improvement, and IPR (Interpersonal Process Recall) (Kagan, 1980) can be processed in the classroom or counseling session. However, other uses may also enhance the learning process. An instructor may wish to "show" the video in a different format such as streaming the video over the Internet, adding video to a PowerPoint, or creating a CD-ROM or DVD for distribution as is discussed latter in this chapter.

To conceptualize the possibilities and potential for multimedia in the classroom, it is necessary to address the logistical information that underlies the production and final result. For example, prior to actually shooting video, determining the purpose for the video, the audience and other issues will be introduced. Video production, including the use of professional camera techniques, editing video on computer, and the transfer of compressed video for streaming and CD or DVD production will also be discussed.

Creative use of video is within in the grasp of many counselor educators. It is hoped that the reader will be challenged to use video in the counseling classroom and to consider publishing video in new ways to enhance the professional development and growth of counseling students.

Video Development Process

This section presents various terms and processes for creating video for use in the counselor education classroom. While the discussion will include hardware and software necessary in the creation process, it is

important to note that the counseling content is the focus. In other words, the message is most important. A counselor educator must have a thorough understanding of the topic area and then add a creative touch to the process (Walk, 1994). Once an idea has developed, production can begin.

To avoid the tendency to use technology for its own sake (Smith, 1997), the message (skill or training technique) should be enhanced by the technology. It is acceptable to explore the limits of technology in creating your project and it is advised to fully understand the capabilities of any technology that enhances your final result. Making an engaging and compelling project should be the key goal in developing your work. Several component areas will help in this process.

Planning your Project

Upon acquiring a new camera and computer capable of video editing it is tempting to begin without a plan, however there are benefits from considering the many issues that lead to the creation of a successful end product. First is the intended audience. What is the message the audience needs to take away from a viewing of the project? The cognitive behavioral technique that instructs one to use visualization and to project to the end of a situation is helpful here. As the audience (classroom participants) is leaving, what message did they take with them? What are the vital information points to be considered? And for counselors, how will this help with clients?

When considering the end message or technique, plan to develop content that clearly presents the material. If, for example, you want to the audience to learn a technique from a theory used in counseling, then a demonstration might be in order. Students often talk about "seeing" the technique demonstrated as a learning need. Your project might be designed to incorporate a clear demonstration and follow-up learning questions.

Determining Purpose

Once the audience has been identified and the message determined, then consider purpose. "What do I hope to accomplish from this presentation?" During this phase of planning knowledge of the content area is vital. For many counseling professionals, knowledge of content is already in place from prior teaching experience and research. Asking questions about how best to present counselor education content can lead to new activities and creative ways to present materials in video format.

In addition, determining a purpose for using video may lead authors toward publication of the video, with the final product containing examples of techniques, demonstrations, and other types of content. Since in most

cases the purpose will be focused on learning, the component rubric or learning goals of a counseling skill or technique should be used. There is a difference between showing a technique and applying a technique as the latter requires much more practice and experience.

Counselor educators also might consider how one can test the results of learning derived from the video presentation and demonstration. While testing by examination is an option, others might consider having students demonstrate their newly acquired skills on videotape.

One final video production consideration is the possibility of publishing the work for broader audiences. Many large publication houses are now considering distributing video-based work on CD-ROM and DVD in a similar manner to text-based material. The purpose can be multi-faceted by design, thus giving the author the option to make proposals for general publication. Here, it will be necessary to research and consider sources of content, become aware of previously published work, and develop new questions regarding delivering ideas on video to your audience. An author must consider developing his or her own materials for publication beyond the classroom. Fair Use laws can allow the author to use materials for classroom purposes that would otherwise be prohibitive when publishing on a large scale. Further research is needed as the discussion of copyright and fair use issues is beyond the scope of this chapter.

Time, Budget, and Schedule

Three considerations must be included in the planning of a video project for counseling professionals. The length of time of the project is an important consideration. Hollywood movie producers often take months or years to pre-plan one two-hour production. While counselor educators may not have this amount of time, a well-planned project with time considerations will effectively shorten the time frame and help organize a multifaceted project.

Budget considerations should include hardware and software cost and availability. Universities usually have staff that can provide equipment and technical assistance for beginning and completing video projects. Interestingly, many new films are emerging from independent filmmakers that do quite well against the typical Hollywood blockbuster movies. In turn, local videographers can be hired to assist in video making and may be within the budget range of small productions. Grants and other assistance may help defray production and distribution costs.

Another consideration of good video production is scheduling. Time constraints can effectively postpone various aspects of production when principle characters and even equipment and locations are inaccessible. It

is wise to consider these three aspects of production when you start building a project. Building a production schedule and allotting time for various aspects of the video work, editing, and post-production is essential in maintaining a working environment.

Video Hardware, Format and Technique

As video cameras have decreased in price, video making is becoming more feasible. The most popular of the newer video cameras is the digital video camera. Digital video uses an internal processor microchip that provides three times the quantity of pixels (the basic unit of electronic composition) of analog cameras. Thus, the resulting picture is much improved. The sophistication of the equipment also has increased, yet most video cameras have simple to use interfaces with features like zoom, auto focus, built-in VCR, and numerous special effects. However, despite these advances, in the hands of a novice camera owner, visual quality and professionalism can suffer. Becoming familiar with even a few essential camera techniques can have a tremendous effect on the final production.

Videography is the art of creating video with the use of professional techniques. It is beyond the scope of this chapter to cover all videography principles. Good camera work is essential for a quality product. As well, proper lighting and sound are the key ingredients for good video.

Many learned consumers, now "pro-sumers", are demanding higher quality video and the camera industry is continuing to meet this demand. Depending on level of sophistication, cameras range in price from a few hundred to thousands of dollars with beginner quality digital cameras at \$700-\$1200.

Hardware and Video Formats

Choosing a camera for video production can be overwhelming. There are several video formats to choose as one starts the process of purchasing, installing, and becoming familiar with video production. A digital video camera (DV) is the highest quality camera available for consumers and offers over 400 lines of resolution. This type of camera has little noticeable loss in quality and most of these cameras have a digital connector called IEEE 1394 or firewire. Firewire, so designated from the Macintosh computer, is capable of high-speed transfer of data from camera to computer.

Other camera formats include Digital 8, Hi-8, Standard 8, VHS and S-VHS. 8mm tape is an industry standard for consumers. This format allows for both analog and digital versions. Digital 8 provides good quality. VHS tape is an analog version, but is still popular. But due to size and resolution quality, the smaller, higher quality digital cameras are now replacing the

VHS cameras. S-VHS cameras offer more lines of resolution (between analog [240] and digital [420+]) yet are expensive and can only be played back in S-VHS VCRs.

Once a camera is chosen, the next concern is quality audio. Wireless microphones are becoming more popular and can easily be adapted for use with video camcorders. Importantly, sound becomes an essential ingredient in the final product. Testing of sound recording equipment must be done prior to recording. Nothing is worse than recording an entire session or demonstration and finding that no sound was recorded with the video. This testing should become a regular procedure before recording.

Also, accessories are an important consideration. Wide-angle lenses may be one accessory that will help with large group situations and for small areas that need a close shot. The better quality lenses will result in better video quality. As with still cameras, lenses and accessories such as filters that improve quality should be considered.

The next most important accessory is lighting. Quality lighting, not just available lighting such as ceiling lights, will improve the resulting video. Professional videographers use 3-position lighting consisting of left and right "key" lights and a background light. As most television interviews show, the background is usually lit separately from the foreground. Also, effect lighting such as a colored light for the background is often used. In addition, a "hair" light is often used to highlight the subject's silhouette. For the beginning videographer, experimenting with lighting is recommended prior to actually recording video.

After camera selection, a video capture card for inputting video into the computer is necessary for digitizing video from the camera into files on the computer. A wide range of video capture cards is available. Many have "firewire" options or have composite (RCA) or S-VHS input and output connectors. Video cards are added to a computer as a component to the computer's motherboard. Once installed, a camera is simply connected to the input on the card. Many software packages will recognize the attached camera as the computer is booted and then become ready for recording the videotape onto the computer's hard drive. Video capture cards can be found anywhere computer hardware is sold and range in price from \$50 to several thousand dollars. For the average user, capture cards in the \$300 - \$500 range is sufficient to capture and record high quality video into the computer.

Computer hardware should be fast and data storage must be large in order to process and store very large video data files from cameras. The average video stream from the camera into the computer is from 350 MB to 500 MB per second uncompressed. This can quickly fill a normal computer hard disk with just a few minutes of video. Hard disks in the 60

to 120 gig range at speeds starting at 7200 rpm are recommended. Video capture cards help reduce the size of an incoming video stream by using various compressions schemes.

Hardware selection and matching of video cards, computers, and cameras, as well as software is becoming easier for the consumer. It is imperative to investigate compatibility between hardware devices before pursuing video production.

Video Technique

Once these initial techniques are considered, a few other video methods become apparent. For example, the location of the shoot (many times this can be the counseling lab, group room, or classroom) should be chosen. Also working with subjects who are oftentimes students, colleagues, and other talent involves giving direction for the proper makeup of the shot. Positioning the "talent" for the best composition will result in a better and more pleasing scene. One only has to look at television and movies to see how conversations are often shot from an angle or over the shoulder of one participant. Thought given to composition of the scene and talent will provide a more pleasing scene for the viewer. While a full review of camera techniques and broadcast composition is beyond the scope of this chapter, it is hoped that the reader will research each of the listed concerns for producing a better video product.

Once video is recorded, many special effects can improve the product in "post-production" and render a complete video for viewing. Such video techniques as fading in and out from scene to scene, video transitions and other effects will be discussed in the next section.

Video Editing and Production

This section will focus on an exciting and recent development in video production: the video editing process. With the latest arrival of desktop publishing on home computers, video production has seen tremendous growth in the recent past. Video editing software and video capture boards, decreasing in price and increasing in power, have found their way to the home user's computer. Many computers sold today are capable of editing and producing by way of digital video, productions that in the past could only be accomplished in major studios with expensive equipment unaffordable by the average consumer. With today's hardware and software products, video can easily be imported and manipulated as well as sound and effects added, that make a final product, from a digital camera source, one of high quality.

Digitizing video is defined as capturing video from cameras in the form of computer files on the hard drive. A digital video file has the extension "AVI" in PC format and "MOV" in Macintosh format. These digitized video files can then be used in editing software to produce a final movie. In preparing a computer for video editing, several aspects should be considered in order to produce a movie.

Capturing files into a computer results in very large file sizes. A high capacity hard drive is needed for storage. Also, larger files such as these will require faster processors in order to play back the video at an appropriate frame rate. Frame rate is defined as the number of video frames per second for normal movement. Typically, this is 30 or 60 frames per second for most video. However, video designed for the Internet should be produced at a much lower frame rate, somewhere near 15 frames per second. Also, audio is contained in the file. Differing degrees of compression can then be applied to change the file size and quality of the video clip.

Video Editing Software

While there are many video editing software packages on the market, an overview of general editing techniques can be adopted from most. In our example, Adobe Premiere, used extensively throughout the video industry, will be used to illustrate the video editing process. Many of the software packages use a "timeline" approach to organizing video and audio for the final product. The video clips, containing audio, will be brought into the software's timeline from the file's directory and placed in an order decided on by the user. Once a complete "set" of video and audio files is imported into the software, the user can decide to trim individual clips and make decisions about the composition from one video clip to the next. In addition, transitions and effects can be added to enhance the product. These transitions allow the user to fade, cut, and use a specialized transition effect between video clips for an overall image impression. Video clips can be "stacked" on top of one another and special effects such as "picture-in-picture" and video moving across the screen in a times sequence is possible.

The software also offers the ability to "mix" audio for voiceovers and other audio effects such as fading in and out voice and music including the timing of sound events that coincide with the video events. Video and audio must match sequentially. For example, a visual of a person speaking must match the movement of lips as words are spoken. Most software manages this problem by "linking" the video and audio clips together. However, the user has control over this and can cut the audio out completely for music, narration or voiceover.

Premiere offers the user extensive controls over video production. While this chapter cannot provide a thorough training to Premiere, we will attempt to overview the process. To overview Adobe Premiere, settings for video capture and playback are necessary. The beginning user will initiate a "project" that contains files for the video and control settings for the codec (compress-decompressor settings) and rendering options. Once a project is defined, the user will begin to import or capture directly video and audio files as well as graphics and other digital files. The Premiere interface is quite robust and new users might feel overwhelmed by the number of options and settings. Importantly, naming and saving files often is a primary work protocol in this and with all computer projects. Customization will allow the user to feel more comfortable with projects within Premiere. After setup of the workspace and settings, capturing video files from the camera or VCR is the next step in the process. Recognition of a digital camcorder by the software on the computer is dependent on the video capture card referenced earlier in this chapter. Given the wide range and types of video camcorders, it is imperative that the video card "recognizes" the camera when connected. Often times, the camera must be turned on before turning on the computer. Most "firewire" cameras will be recognized at the initial boot process. In Adobe Premiere, the capture menu option will give a small window that displays the video much in the same way a side LCD panel displays the picture on many digital camcorders. This display allows the user to find the starting point for video capture. Also, device control (play, stop, pause, fast forward, re-wind) on the software can be set to control the camera playback, such that the camera can be operated from the computer and software. Once machine control is enabled, the user can simply control all functions from the software.

Whether capturing one file or "batch" capturing an entire tape, the software will automate the process and ask for the file location for storing the files. Files captured can be used immediately in a project or saved for later use. Once files are in the computer, video editing can begin.

Editing video is not a complex process given the sophistication of software packages on the current market. In fact, experience shows that novice users can quickly learn the process and complete a video project with good results. The editing process for Premiere and for most video editing software packages is based on a timeline approach. The timeline is a space for video and audio clips to reside giving the user options for rearranging, organizing, cutting and removing, and adding effects toward a final product. Simply put, the timeline is a graphic display of the organization of video and audio that can be played back at any time by the user. The control over timing, audio and any displayed graphic is at the user's

command. Video, audio, graphics, titles, and other files can be "dragged and dropped" onto the timeline and shown. Determination of sequencing is again at the user's command. Changing or deleting the files from the timeline is the same drag and drop process.

Individual video and audio clips can be editing by determining "in" and "out" points. Suggestions for beginning and ending a video sequence can be gleaned from the user's experience, but usually will begin with a fade up from a basic black clip. One only has to watch professionally made movies and television to gather ideas for a project. Fading into and out of video and audio is achieved by points on the timeline that are graduated from a beginning point, usually zero, up to the 100%. With special effects like voiceover, the music background may be set at 20% to 50% while the voice is set for 100%. In addition, special effects like transitions - artistic changes between one clip and the next - are achieved by overlapping video clips on the timeline and using a software clip from within the program to gradually fade from one to the other. Again, many of these processes are achieved by dragging the desired effects, as with clips, to the timeline.

Titles for video overlay can be created within most video editing packages. Most have a separate or built-in program that allows the user to type in any title and change the size, font, location, etc. The advantage is that titles and any phrases can be placed over the top of video and controlled in the same manner as clips (e.g., fading in and out, adding shadow effects, etc.). Of course, more complicated compositions can be created, such as the use of transparencies or superimposing clips over each other, and "keying" out selected colors for other material to show through. These techniques can also be easily mastered with practice. The user should be encouraged that the software and hardware has developed tremendously over the past few years. Compatibility issues are becoming less of a concern and the ease of use has risen for most video editing packages.

Once a video production is completed, the user has many options for displaying the result. Many videographers record a "master" video of the final result for storage and for "dubbing" to other formats including VHS and back to digital tape. Essentially, the video is exported in any one of a number of formats. Formats include: video for web-based viewing, CD-ROM, and for the latest format, DVD.

HTML and Streaming Video for Web

Most graduate students in counseling today have Internet connections in their homes and certainly have it available on campus. This access, while at first seen as an e-mail and library research tool, has developed to include

supplemental sources for faculty presentation and teaching of counseling-related information. Many counselor educators have made use of web creation software to incorporate their own websites into their teaching approach. Commonly, these programs allow for content such as text, lecture materials, handouts, tests, and other items, to be displayed on a website that students can access anytime. There are numerous advantages for both instructor and student of having a website that contains class materials. Obviously, streaming video can add to that counseling-related information.

Using video in HTML documents has developed in line with the expansion of Internet service. Many Internet Service Providers (ISPs) are capable of hosting sites where video can be streamed if processed in a correct format. A number of software and hardware products can process video files into "compressed" video for streaming. Given the constraints of data rates on individual computers and Internet connections, the display of video can be of high quality or of less quality in picture and sound. This section will quickly cover a few methods for streaming video. One familiar presentation software package, Microsoft's PowerPoint, in its latest version, has a product for adding video that will sequence slides with streamed video for the Internet.

Video for the Internet is less complicated and expensive than ever before. New tools for the compression and streaming of video have been created. The process is less cumbersome and such that the beginning user can realize the desired results. Preparation of video for streaming on a web server is a matter of file size and frames per second (fps) for display. The average computer can easily process video at a frame rate of 15 frames per second. This "average" fps is often used as one establishes settings for processing video into compressed video for the Internet. The two prominent streaming packages available are: Microsoft's Media Encoder and RealNetwork's Media Producer. Both of these, as with other products for producing ready to stream video, operate similarly. That is, video is imported into the product, prepared for compression, and a compressed video is created. Data rate, length of the video and size of the picture, all affect the resulting video file.

Microsoft's Media Encoder can quickly convert an AVI file into a compressed file at an acceptable frame rate ready for the Web. One important issue facing those wishing to add video to their web site is whether or not their ISP is equipped with a streaming server. The streaming server is a software package for servers that allow the video to be processed during display from the server side and avoids the slower processing involved in having the end user download the entire video clip before it is displayed. Obviously, a streaming server has advantages over ISP's without the software. Still,

the individual user can stream video without such a server, but has to be very aware of file size and frame rate. Video files over 1 meg in size can be very difficult to display if the end user's computer is an older model or the Internet connection is slow, such as with dial-up modems.

Importantly, and as an example, the Microsoft product remains free. A desktop user can download the media encoder and begin creating video files for the Internet in a short amount of time. The file formats for streaming video are many and one has to keep current with the latest versions. For example, Microsoft's Active Streaming Format (ASF) has been replaced with Windows Media Video (WMV) and Audio (WMA) along with newer versions of the encoders. References for downloading these encoders are included on the CD-ROM.

An exciting development for adding video to PowerPoint has been the addition of the PowerPoint Developer. Microsoft Producer is a free add-on for Microsoft PowerPoint® version 2002. It helps in the process of capturing, synchronizing, and publishing audio, video, slides, and images. The Producer product helps create media presentations that are viewable on demand in a Web browser (Lichtenberg & Travis, 2002). As with a number of products in this category, the software has a "wizard" (a template for creating a new project) that leads the user through the process. This free product for PowerPoint 2002 users can synchronize slide display with video and voice. The end user can go forward or backwards during the presentation for more control of the content. In addition, the final presentation can be saved on the hard drive for later use, added to a CD-ROM, or saved to a server for streaming. Multiple frame rate (measured in kilobyte per second or kbps) can be chosen depending on the target audience and Internet speed.

Saving these files at the proper frame rate is essential to insure the end user has a comfortable visual experience with your content. Trial and error testing on several different computer systems may be in order before releasing the composition.

Using this medium for the counselor education classroom is apparent. Slide presentation is a common technological method in training and teaching. This additional technique will give the educator a versatile tool for use on the Internet and in supplemental ways for getting content to students. Narration and video demonstrations can effectively enhance the learning experience for students. Projects providing students with opportunities to become efficient in the use and creation of video for the Internet can be the first step in their development in the area of video technology for future professional growth. Creating video products for class instruction and Internet distribution is a task that can be easily accomplished given the current technology.

CD-ROM

Another technology that is becoming easier to use is the creation of interactive CD-ROMs. The paradigm of interactive CD-ROM creation has been slow to develop. Typically, the difficult and often times inaccessible training needed to take advantage of the products used for video creation has slowed this development. While a few new products have been developed for this purpose, there are several that continue to be used most often for CD development. Macromedia's Authorware and Director software are common creation tools. Another viable product is IndigoRose Corporation's AutoPlay Media Studio. These products use menu and command line instruction for constructing interactivity using the author's content on a CD. That is, content developed by the author is then imported into the software program and arranged in sequence. The interactivity is created through the use of action-connected links displayed to the user. The end user navigates through the content – viewing video, listening to audio, reading text, viewing graphics, etc. - and has control over the pace and type of content. The key ingredient in the effectiveness of the products is the interactivity.

The software is designed to resemble pages or chapters in a book or web pages on the Internet. This design allows authors to create and place subject matter in sequence and to link additional, supportive content for study to any content currently viewed by the end user. The development of content for CD-ROM use can also be specialized or adapted to topics. Authors can decide how CDs can be used to enhance learning. Many CDs have been created as supplements to texts that can add multimedia content. However, with the proliferation of creation software, stand-alone CD-ROMs that cover a topic area in depth are on the rise. Several CD-ROM development companies that will create tailor-made interactive CD-ROMs are now available on the Internet. These companies simply collect materials from the author and create an interactive CD to your specifications using their multimedia systems, an inexpensive method that should continue to grow in coming years.

Video for CD-ROM can be in any number of formats, but must be compressed for display. Typically, a streaming compression format, such as ASF, WMV (Microsoft), RM (RealPlayer), or MOV (QuickTime) is used. However, the Moving Pictures Expert Group, a large organization of video experts, has developed compression/decompression schemes (codec) named after them, called MPEG. Two of these codecs are used extensively in video CD and DVD. MPEG-1, VHS quality is used for CD-ROM full screen

video. MPEG-2 is used exclusively for DVD video production and is of significantly higher quality.

Another method of creating CD-ROM for multimedia use in the classroom is that of using the HTML format. Materials used to create web pages can easily be stored on a CD and accessed by the user's web browser. Using a web design software package, such as Macromedia's Dreamweaver or FrontPage, can be the first step in CD-ROM creation. Text, graphics, and streaming video can then be displayed through the browser and links to additional content pages easily accessed.

An advantage of CD-ROM use for teaching is that supplemental material can be created for the student to use outside the learning classroom. Material on a CD can be accessed as needed by the user. As video is added to CDs, classroom time used to view demonstrations can be eliminated and processing of content may improve. Finally, publishing of professional materials such as texts or other training materials continues to evolve from a text-based medium to a multimedia one. One online journal, the *Journal of Technology in Counseling*, advocates for multimedia content in professional publications. Large publishing houses are now accepting and inviting more multimedia content, such as interactive CD-ROMs, for publication.

DVD

An exciting and expanding multimedia area is that of the recordable DVD. The DVD industry is growing at a rapid rate. DVDs are replacing videotape as the medium of choice for video.

CD-ROM or DVD-ROM devices are standard peripherals packaged with virtually every multimedia PC sold today. There is a burgeoning market in software that ties optical media playback to Internet-based presentations. But, perhaps most importantly, stand-alone DVD/CD players are the fastest selling new format in the history of consumer media distribution. It is reasonable to expect that advanced versions of the DVD player will replace the VHS machine as the dominant force in content in the not-too-distant future. The introduction of affordable DVD-Video recorders accelerates this transition. In fact, DVD recorders have dropped dramatically in price in the past two years.

DVD is the next generation of digital disk technology (Taylor, 2001). The amount of information that can be stored on a DVD is 7 to 25 times the amount of information that can be stored on a CD. The physical structure of a DVD allows a laser light to read data from one of four basic types of DVDs. DVD 5, 9, 10 and 18 refers to the amount of information held either

on single-sided disks or double-sided disks. Given the amount of information from a digital camera, the DVD is a perfect medium for holding large amounts of information. Even with this storage size, video still must be compressed. Compression of video streams is a matter of removing various pieces of data that is redundant and unnecessary for the viewer. This has led the video industry to develop the compression scheme for DVD. This compression codec is called MPEG 2. Thus, any video for use with a DVD must be in the MPEG-2 format. All software, made for DVD production, has this codec built in which gives the viewer full screen (720x480) and over 500 lines of resolution.

For the first time, the DVD disk allows the user to interact with the video and jump to the exact location of a scene at the touch of a button without having to wait for a tape to rewind. This interactivity gives control over navigation to the end user. An exciting part of DVD development has been the ability to search instantaneously for video content, yet another facet that is just becoming known. This is the DVD-ROM technology. DVD-ROM goes beyond the video interactivity and allows developers to put other types of material on the disk in the same interactive way. Text, graphics, searches, and other interactivity is available with DVD-ROM. In fact, DVD disks can become "hybrid" disks and can work in a set-top DVD player and work in computers that increase the level of interactivity. Another interesting facet of this development is that what is now commonplace, that is, CD-ROM writable technology, can be applied to DVD. The difference is the vast amounts of information that one can write to a DVD over a CD-ROM.

DVD Features

The interactivity of DVD design, particularly the DVD hybrid disk, gives the user more information and control over content. Hollywood produced DVDs often show multiple camera angles of the same scene, additional audio content, such as descriptions and explanations of scenes by the actors or producers, and choices for the viewer. This last feature is quite remarkable when considering the production value. Given a choice, the end user can choose between different endings and outcomes and move to a completely different scenario. Counselor educators might well think of counseling sessions and training counselors. An example of applying this technology might be a video showing several differing outcomes based on a counselor's intervention with clients. One can only imagine the affect of such a training medium. With multiple angle video, several shots of the same scene can be display at the same time. For techniques, you may show the procedure from the view of the participants, close up, or add a diagram

or animation that describes the procedure from another, completely different, point of view. This capability is opening new ways to envision how training can be done.

Using the DVD capabilities can only enhance education. Content materials, video, text and more can be produced and called up by the instructor to present materials in a timely manner. Teachers may be free to teach using this medium. Also, there is no compromise of video quality and content. The educator or trainer can take the DVD and computer into a field experience and show broadcast quality video and audio to trainees at anytime. Training manuals become full motion video rather than a piece of paper.

Another fascinating feature that is possible with DVD is its multicultural applications. One DVD disk can be designed for 32 different countries and each country can see and understand the content from their own language. This is simply a remarkable capability. Developers and producers of DVD can market their product worldwide in the native language of the country.

One can also look at DVD as a library of content readily accessed on demand. Several different versions of the same content and large archives can be contained on the disk. This permits the viewer to access data that they choose, as they need it. In addition, the producer of a DVD product can allow the user an "inside" view of what they were thinking, the reasons behind a certain presentation, and give a more in depth view of the creative process. This one aspect alone will transform how we use video and how training will change in the coming years.

Video Production and DVD Authoring

There are a number of DVD authoring software packages available to the consumer. Many packages will "transcode" raw video footage into the proper MPEG-2 format. Hardware and software enhanced compression is available typically coming in as AVI uncompressed video for superior picture quality. Software is set up much like CD-ROM authoring software in that menus are created for the end user to select scenes and have a level of interactivity. Each video is divided into scenes and marked for selection. The menu gives an option for navigating directly to that scene. Usually, an option exists for playing the entire video from beginning to end as well.

In creating a DVD, the author must decide the layout, background, music, and scenes that will make up the DVD. Some authoring software packages, costing \$50 or less, can quickly import video, convert into the file structure needed for DVD, and produce simple menus that look quite good. Other more expensive software packages range from several hundred

dollars to several or more thousands, allowing the author to use "moving" menus (those with video in the background and small moving video buttons) and many other features not found on the less expensive versions. Again, the DVD authoring platform allows for full screen broadcast quality video and gives the user the ability to control viewing and content. Authors using software to create DVDs can begin to see the advantages for learning. For example, construction of a multilevel tutorial that stops at a certain point and goes to a quiz to test learning must be designed as the author creates the DVD. What questions are asked and what happens as the user answers, can be a function of how the author designed the product. Remediation for wrong or incomplete answers using a special section, which the user is sent on the DVD, will enhance the learning process and give the trainee another opportunity for learning. This branching ability in authoring enables the author to create levels of abstraction that connect with the trainee's learning styles, thus producing a more effective learning experience.

DVD Hardware

DVD players and DVD recorders have dropped substantially in price over the past few years. Many computers come equipped with DVD-ROM drives allowing DVDs to be played on the computer screen. The DVD recorders are currently between \$300 and \$500 and come with authoring software in most cases. There is a compatibility issue for DVD created on some recorders. An author must test created DVDs on machines, including set top DVD players, to ensure there are no problems with reading the DVD. Many newer model players offer many format compatibilities so this has become less of a problem. The basic issue here is that manufacturers of DVD recorders market proprietary formats. The industry is working to overcome the multiple format problems. Still the author purchasing DVD recorders should research this issue prior to purchasing a unit in order to ensure a distributable product.

DVD media blank disks have also dropped in price. The typical DVD blank disk now sells in the \$1 to \$3 range and can go below \$1 in price. This compares favorably to the less than \$.50 price for blank CD-ROMs.

DVD Future

The future for DVD authoring looks bright. More computers are being sold with DVD drives, the software and hardware are becoming more accessible, and the potential for DVD authoring is coming closer into the hands of creative people. The medium will certainly enhance education and those educators who take advantage of video and DVD authoring will make significant contributions to the teaching and learning disciplines. One

only has to look at local video rental stores to see the change occurring for DVD. The transition from VHS tape to digital DVD entertainment media is quite remarkable. The growth for educators, particularly counselor educators, is in the hands of those who will apply this technology to their teaching and training efforts. With a little training, the counseling field will reap tremendous benefits for students and colleagues alike.

The impact of the world of digital video and the world of computer interactivity is probably one of the most exciting combinations of technologies that have come about in a number of years. It is hoped that this technology will excite those in education toward being more creative and successful in their field.

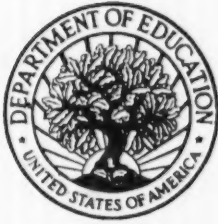
Conclusions

Counselor educators can, within a reasonable budget, create, build, and produce high quality video products for use in the classroom and for advancing their professional development. Many online journals and publishing houses are seeking video and multimedia source material from counselors. It is highly likely that this trend toward the infusion of technology will continue (Liebowitz, 1997). According to Keane (2002) teaching in the classroom can only be positively assisted with the appropriate use of created video that is tailored to the needs of students. Counselor educators who take time to learn this technology, conceive of the learning potential, and create their own teaching content will help students in their technological advancement. Further, video technology and the various format options, including web, CD-ROM, and importantly, DVD, will continue to grow. Counselor educators have an opportunity to create content and distribute that content, helping the profession to grow. Lastly, taking advantage of this opportunity for professional and discipline growth can only result in advancing the helping profession's mission to help others.

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